

<b>REPORT DOCUMENTATION PAGE</b>			<i>Form Approved</i> <b>OMB No. 0704-0188</b>	
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<b>PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.</b>				
<b>1. REPORT DATE (DD-MM-YYYY)</b> 23-07-2014		<b>2. REPORT TYPE</b> Technical		<b>3. DATES COVERED (From - To)</b> 01-Sept-2010 to 31 Mar 2013
<b>4. TITLE AND SUBTITLE</b> Advanced Rotor Blade Materials Evaluation			<b>5a. CONTRACT NUMBER</b>	
			<b>5b. GRANT NUMBER</b> N00014-10-1-0943	
			<b>5c. PROGRAM ELEMENT NUMBER</b>	
<b>6. AUTHOR(S)</b> Andrew W. Phelps, Ph.D.			<b>5d. PROJECT NUMBER</b>	
			<b>5e. TASK NUMBER</b>	
			<b>5f. WORK UNIT NUMBER</b>	
<b>7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)</b> University of Dayton 300 College Park Dayton, OH 45469-0002			<b>8. PERFORMING ORGANIZATION REPORT NUMBER</b> UDRI-TR-2014-144	
<b>9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)</b> US Navy Office of Naval Research 875 N. Randolph St. Arlington, VA 22203-1771			<b>10. SPONSOR/MONITOR'S ACRONYM(S)</b>	
			<b>11. SPONSORING/MONITORING AGENCY REPORT NUMBER</b>	
<b>12. DISTRIBUTION AVAILABILITY STATEMENT</b>				
<b>13. SUPPLEMENTARY NOTES</b>				
<b>14. ABSTRACT</b> A suite of test specimens to be provided by ONR are to be examined and exposed to rain, sand, and combined sand and rain impact erosion. Specimens will include one inch square coupons and leading edge airfoils. The results of these exposures are to be documented and described in a report at the conclusion of the effort.  The work described here is based on information provided by Dr. David Shifler and Mr. Gil London. A series of four sets of candidate erosion resistant materials are to be evaluated with an option of doing a second set of three additional candidate materials. The risks associated with this task is low provided that the samples of effective erosion resistant systems can be provided by the Navy for evaluation.				
<b>15. SUBJECT TERMS</b>				
<b>16. SECURITY CLASSIFICATION OF:</b>			<b>17. LIMITATION OF ABSTRACT</b>	
a. REPORT	b. ABSTRACT	c. THIS PAGE	<b>18. NUMBER OF PAGES</b> 2	
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20140728309

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July 23, 2014

## **Advanced Rotor Blade Materials Evaluation**

Report No.: UDR-TR-2014-144

Proposal No.: R-18518

Grant Award No.: N00014-10-1-0943

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## **INTRODUCTION**

This report is to meet the reporting requirements of the ONR Project “Helicopter Rotor Blade Erosion Resistance Evaluation” that was concluded in 2013. This project was a follow on to a previous ONR Program to evaluate helicopter rotor blade erosion resistant treatments that had been supplied in response to a US Navy BAA Program. The Navy Program was meant to improve the lifetime, time between maintenance, and survivability of US Navy helicopter rotor blades.

## **ACTIVITY REPORT**

The work that was proposed for this project was to continue to measure the erosion resistance of various helicopter rotor blade treatments supplied by the US Navy to the testing location. Several tasks were initiated and completed during the early part of this project in anticipation of the receipt of a large number of test specimens to evaluate. The test specimens were never supplied for evaluation so the only work that was performed was the task of setting up the laboratory facility, performing the standard lab routines needed to ensure quality data collection, and training of technicians in the handling and evaluation of the test specimens. This program did not receive any incremental funding past the amount used to set up the testing described above.

## **CONCLUSIONS**

The evaluation of wear resistant treatments on the leading edges of helicopter rotor blades was not a standard procedure at the time of the award for the first phase of specimen testing from which this program evolved. Mil Spec 3033 was produced for the evaluation of helicopter rotor blades after the earlier ONR BAA Program had been concluded and while this specific program was active. This program was one of the drivers behind the need to establish a standard testing method. The understanding developed during the earlier testing program allowed some testing formalism to be established and incorporated into the new Mil Spec.